Application of Bethe-Salpeter equation to quantum communication processes

Igor Kondrashuk[1]

[1]Universidad Del Bio-bio, Chillan, Chile

Optic theorem for scattering amplitudes in quantum field theory may be solved in terms of a contour integral in the complex plane of Mellin moments. Then the integral may be transformed by complex diffeomorphism to a dual contour integral which solves explicitly the renormalization group equation for the amplitudes. We give several examples of such a duality. On the other side, the optic theorem may be re-presented as a Bethe-Salpeter equation and then as a Schrödinger equation that is the main tool to analyze quantum communication processes in quantum computers. The Bethe-Salpeter equation may be solved in terms of Jacobians of complex maps transforming the contour integral to an integral of Barnes type. As an example, for a task in quantum communications the corresponding Schrödinger equation is solved by the proposed method of complex maps.